



City of Raleigh Stormwater Management Division

Stormwater Management Advisory Commission (SMAC)

Fiscal Year 2016 Annual Report

Dear Mayor McFarlane and Members of the City Council,

The Stormwater Management Advisory Commission, which was formed in April 2004, has invested many hours becoming familiar with and discussing the City's stormwater issues. The Commission's work during the period from July 1, 2015 to June 30, 2016 has been focused in these areas:

1. Stormwater Capital Improvement Program
2. Stormwater Drainage Cost-Share Project Petitions
3. Stormwater Quality Cost-Share Project Petitions
4. FEMA Hazard Mitigation Program Acquisition
5. Review of Stormwater Programs and Policies
6. Green Infrastructure (GI)/Low Impact Development (LID)
7. Development of the Stormwater Integrated Project Prioritization Model
8. Participation in the What Works Cities Initiative

1 – Stormwater Capital Improvement Program (CIP)

The Commission reviewed and approved the proposed Stormwater Capital Improvement Program for fiscal years 2017 - 2021. Following is a list of CIP projects completed during the past year as well as currently active projects:

<u>Projects Completed</u>	<u>Date Completed</u>	<u>Type of Project</u>	<u>Final Project Cost</u>
Dixon Drive Culvert Improvement	6/2016	Culvert Improvement	\$85,000
E. Martin Street	3/2016	Stormwater System Improvement	\$90,000
Five Points Drainage Improvements	11/2015	Stormwater System Improvement	\$992,000
Hillsborough St. & Park Dr. Drainage Rehabilitation	1/2016	Stormwater System Improvement	\$259,000
Industrial Drive	6/2016	Culvert Improvement	\$229,000
North Boundary Street	6/2016	Stormwater System Improvement	\$109,000
Northshore Lake Dam & Spillway Rehabilitation	5/2016	Lake Preservation	\$4,135,000
Sherman Avenue Culvert Improvement	12/2015	Culvert Improvement	\$305,000
<i>Total Completed</i>			<i>\$6,204,000</i>

<u>Projects Under Construction</u>	<u>Estimated Completion</u>	<u>Type of Project</u>	<u>Budgeted Project Cost</u>
Lower Longview Lake Dam and Spillway Rehabilitation	10/2017	Lake Preservation	\$3,400,000
Alamance Road Drainage Improvement	6/2017	Stormwater System Improvement	\$225,000
<i>Total Under Construction</i>			<i>\$3,625,000</i>

<u>Projects Under Design</u>	<u>Estimated Completion</u>	<u>Type of Project</u>	<u>Budgeted Project Cost</u>
Alexander Road & McCarthy Street	6/2017	Stormwater System Improvement	\$140,000
Beechwood-Cypress Neighborhood Area Improvements	12/2018	Stormwater System Improvement	\$3,400,000
Blenheim Drive Culvert Rehabilitation	6/2017	Culvert Improvement	\$360,000
Bragg St/State St Culvert Rehabilitation	6/2018	Culvert Improvement	\$250,000
Brentwood Today Stream/Wetland Restoration	9/2017	Lake Preservation	\$1,400,000
Brockton Drive Lake Phase 1 (Upper Lake)	10/2017	Lake Preservation	\$2,018,000
Brockton Drive Lake Phase 2 (Lower Lake)	12/2018	Lake Preservation	\$2,850,000
Crabtree Boulevard Culvert Rehabilitation	6/2017	Culvert Improvement	\$275,000
Lake Dam Road Bridge Replacement	12/2017	Bridge Construction (On Behalf of Transportation Dept)	\$1,032,000
Laurel Hills Dam & Spillway Rehabilitation	12/2017	Lake Preservation	\$2,500,000
Laurel Hills Watershed Study	3/2018	Stormwater System Improvement	\$725,000
Lower Durant Dam/Spillway Reconstruction (Design)	6/2017	Lake Preservation	\$300,000
Lower Longview Lake Limited Dredging	10/2017	Lake Preservation	\$300,000
Lower Longview Lake Southern Tributary Stream Stabilization	6/2017	Stream Restoration/Stabilization	\$300,000
North Ridge Phase 4	6/2018	Stormwater System Improvement	\$1,400,000
North Ridge Phase 5	12/2018	Stormwater System Improvement	\$2,300,000
Ramblewood Drive Drainage Study	12/2018	Stormwater System Improvement	\$270,000
Scotland Street Culvert Rehabilitation	6/2018	Culvert Improvement	\$600,000
Sierra Drive System Improvements Phase 1	6/2018	Stormwater System Improvement	\$1,550,000

Swann Street System Improvements Phase 1	9/2019	Stormwater System Improvement	\$1,750,000
Swift Drive/Pineview Drive (Simmons Branch Drainage Phase 2)	4/2018	Stormwater System Improvement	\$4,200,000
West Drewry Lane Culvert Replacement	6/2017	Culvert Improvement	\$1,175,000
Western North Ridge Phase 1	9/2018	Stormwater System Improvement	\$2,000,000
Western North Ridge Phase 2	10/2019	Stormwater System Improvement	\$1,400,000
White Oak Lake Dam Reconstruction	6/2018	Lake Preservation	\$3,000,000
Total Under Design			\$34,495,000



**North Boundary Street
Before Construction**

**North Boundary Street
After Construction**





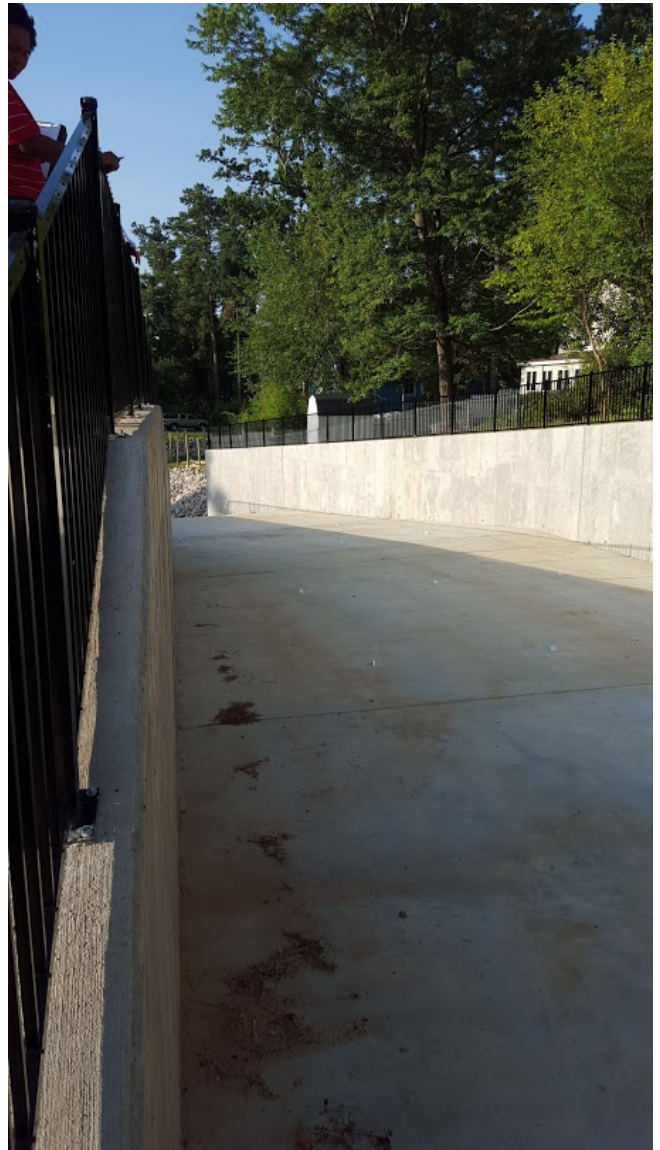
Northshore Lake

Left: Backside of dam embankment prior to construction.

Northshore Lake

Right: Primary spillway prior to construction.





Northshore Lake

**Above Left: Reconstructed
dam embankment.**

**Above Right: Reconstructed
spillway.**

2 – Review of Stormwater Drainage Cost Share Projects

Staff received numerous requests from property owners for assistance under the Drainage Assistance Program. The Commission approved seven projects in FY2016, totaling \$754,500. These projects will help alleviate severe erosion, repair drainage systems and reduce flood damage to structures.

<u>Newly Approved Projects</u>	<u>Date Approved</u>	<u>Type of Project</u>	<u>Total Cost</u>	<u>City Share</u>
4925 Pinehurst Drive	12/2015	Structural Flooding	\$160,000	\$160,000
901 E Davie Street	12/2015	Structural Flooding	\$140,000	\$135,000
301 Glen Valley Drive	12/2015	Severe Erosion	\$86,000	\$81,000
3412 Astro Court	5/2016	Severe Erosion	\$65,000	\$65,000
1338/1340 Courtland Dr. & 1329 Mordecai Dr.	5/2016	Structural Flooding	\$220,000	\$220,000
6818 Valley Lake Drive	5/2016	Severe Erosion	\$43,000	\$38,000
5009 Wickham Drive	5/2016	Failing Infrastructure	\$41,000	\$36,000
<i>Total Newly Approved</i>			<i>\$755,000</i>	<i>\$735,000</i>

Drainage Assistance projects completed (constructed) in FY2016 included the following:

<u>Projects Completed</u>	<u>Date Approved</u>	<u>Completed</u>	<u>Type of Project</u>	<u>Total Cost</u>	<u>City Share</u>
6132 River Landings Drive	4/2011	July 2015	Severe Erosion	\$22,775	\$18,219
1600 Park Drive	4/2011	September 2015	Failed Infrastructure	\$12,600	\$10,080
705/709 Hunting Ridge Road	10/2011	September 2015	Severe Erosion	\$15,395	\$12,316
520/524 Lakestone Drive	9/2009	September 2015	Severe Erosion	\$9,607	\$7,686
110 Glascock Street	5/2014	September 2015	Failed Infrastructure	\$15,000	\$12,500
7613 Sutcliffe Drive	10/2011	October 2015	Failed Infrastructure	\$30,378	25,278
5612 Maram Court	4/2010	October 2015	Severe Erosion	\$22,680	\$19,780
1404/1408/1412/1416 Onslow Road	3/2009 & 4/2010	November 2015	Severe Erosion	\$130,844	\$115,844
4125 Windsor Place	4/2015	November 2015	Failed Infrastructure	\$21,908	\$4,382
3900/3904 Western Boulevard	9/2013	February 2016	Structural Flooding	\$81,861	\$77,861
3509 Octavia Street	4/2011	March 2016	Failed Infrastructure	\$65,955	\$58,522
4701/4801 Royal Troon	4/2012	March 2016	Failed Infrastructure	\$36,782	\$29,977
1108/1112 Temple Street	10/2011	March 2016	Failed Infrastructure	\$51,447	\$43,747

2913 Claremont	4/2012	May 2016	Severe Erosion	\$6,900	\$6,440
4617/4621 Shoalcreek	10/2011	June 2016	Failed Infrastructure	\$5,416	\$1,354
Total Completed				\$529,548	\$443,986

3 - Review of Stormwater Quality Cost Share Projects

Staff received and qualified two requests (*noted below) from property owners for assistance under the Stormwater Quality Cost Share Program in FY2016. The Commission reviewed these requests, totaling \$10,568. These projects reduce pollutant loads to local surface waters, provide valuable examples of on-site stormwater management, increase public awareness of water quality concerns, and in some cases (cisterns) conserve potable water. Following is a list of Stormwater Quality Cost Share projects completed during the past year, as well as projects in progress as of June 30, 2016.

<u>Projects Completed</u>	<u>Date Completed</u>	<u>Type of Project</u>	<u>Total Cost</u>	<u>City Share</u>
6001 Lead Mine Road*	12/2015	1,750-Gallon Underground Cistern	\$8,700	\$6,525
Total Completed			\$8,700	\$6,525

<u>Projects Under Construction</u>	<u>Estimated Completion</u>	<u>Type of Project</u>	<u>Total Cost</u>	<u>City Share</u>
827 E Hargett St	TBD	550 Gallon Above-ground Cistern	\$2,950	\$2,213
2705 Talbot Court West	9/2016	1150 SF Permeable Driveway	\$21,900	\$16,425
Total Under Construction			\$24,850	\$18,638

<u>Projects Under Design</u>	<u>Estimated Completion</u>	<u>Type of Project</u>	<u>Total Cost</u>	<u>City Share</u>
2124 Fallon Oaks Court	TBD	200 Gallon Underground Cistern	\$4,600	\$3,450
510 West Martin Street (Raleigh Union Station)	2017	5000 SF Permeable Parking / Green Roof with Cistern / Bio- retention Cell # 3	\$426,470	\$290,000
2909 Oneida Court*	10/2016	1,050-Gallon Above-ground Cistern	\$5,390	\$4,043
Total Under Design			\$436,460	\$297,493



Left: Permeable paver parking area and driveway at 2705 Talbot Court



Right: Underground cistern being installed at 6001 Lead Mine Road

4 – FEMA Hazard Mitigation Program Acquisition

The Commission continues to support the Stormwater Program's efforts to acquire repetitive loss properties through the use of FEMA Hazard Mitigation Grants. During Fiscal Year 2015, the Program acquired the Capital Inn at a total cost of \$1,160,000. Because this acquisition was funded wholly by State and Federal grant money, the City incurred no cost in the furtherance of our efforts to reduce property damage due to flooding. In addition, the City acquired an adjacent floodprone property at 1801 Capital Boulevard (Dunkin Donuts) using Stormwater Utility funds at a cost of \$317,000.

5 – Review of Stormwater Programs and Policies

Over the course of Fiscal Year 2016, the Commission reviewed several stormwater policies and programs. These include:

- The Commission spent the latter part of 2015 and early 2016 reviewing options for enhancement of the Division's **Drainage Assistance Program**. Staff presented several options ranging from no change to the cost-share program to much more progressive options that included removal of cost-share requirements, establishment of permanent public drainage easements over all improvements and increased funding to the program's annual budget. Ultimately, the Commission endorsed a complete revision to the Drainage Assistance Policy which included removal of private property cost-share for assistance projects and established the dedication of a permanent drainage easement over all system repairs on private property made through the Drainage Assistance Program. As part of the Division's capital budget review, funding for the program was also recommended to be increased from \$750,000 per year to \$1,250,000 per year for Drainage Assistance Projects.
- In addition to the above noted Drainage Assistance Program enhancements, the Commission elected to revise the program's **project review cycle** by removing the bi-annual requirement and providing for a more flexible, bi-monthly project review schedule (as required) to allow the program to become even more responsive to higher priority and more urgent drainage needs.
- The Commission worked closely with Stormwater staff to provide review, input, and recommendations for future City Council of the City's **Lake Preservation Program and Policy**. The Lake Preservation Program was originally established in 1994 during a time when larger scale, regional stormwater management controls were often deemed to be preferred as a means for controlling runoff. Two decades later, we now better understand that balanced stormwater controls, including smaller scale, more distributed measures across the community, can provide significant benefits. Depending upon the issues, concerns, and community goals within a given watershed, retrofits to an existing pond or lake may remain a viable and desirable means to manage public runoff. In other cases there may be equally viable and potentially more cost effective alternatives available for the community to consider. In their review and recommendations, SMAC envisions a stronger linkage to watershed management and updated City and Stormwater priorities for the enhanced future lake management program. Policy recommendations associated with this item will be brought forth to the City Council for consideration in FY2017.
- The Commission also finalized recommendations related to **impervious area exemption limitations**. These recommendations were forwarded to the City Council during discussion of TC-6-15, at which time the City Council authorized a new text change to incorporate the exemption limitations into the Unified Development Ordinance. Currently, this new text change, TC-2-16, is being considered by the Text Change Committee of the Planning Commission.

6 - Green Infrastructure (GI)/Low Impact Development (LID)

The Commission continues to strongly support advancing the use of GI/LID for managing stormwater. In May 2016 the Commission endorsed recommendations of staff and two GI/LID work groups to City Council for changes to the City's code, policies, and procedures for encouraging and reducing the number of barriers to use of GI/LID development and redevelopment techniques. The Commission anticipates providing additional recommendations to Council as these recommendations are implemented.

7 - Completion of Integrated Stormwater Capital Improvement Project Prioritization Model

The Commission championed completion of the Integrated Stormwater Capital Improvement Project Prioritization Model and Adaptive Implementation Plan for the Stormwater Program. The successful effort included collaboration with internal and external program stakeholders including SMAC, staff, and interested participants from the public. The model, aligned with the City's recently adopted Strategic Plan, tangibly connects the mission of the Stormwater Management Program to real world, on the ground projects that meet community and regulatory requirements.

Drawing from technical and management practice review as well as local experience and context, the City team and SMAC created the model over an aggressive six-month period during 2015. The resultant Integrated Prioritization Model, housed within a relatively simple and robust database, now serves as a key strategic and operational level planning tool for the community's growing portfolio of stormwater management projects. The foundation of the model rests in nine integrated criteria - these are:

- Public Safety and Public Health
- Flood Hazard Reduction Benefits
- Regulatory Mandates and Compliance
- Water Quality Benefits
- Watershed Management Benefits
- Stormwater Infrastructure Asset Management Benefits
- Community Support and Implementation Complexity
- Resource Leveraging Opportunities, and
- Indirect Community Benefits

Optimizing use of available resources, a preferred project effectively brings together stormwater quantity and quality management to help achieve multiple goals. The outcomes from this work demonstrate leadership in municipal project identification and evaluation, systems integration, communication, and prioritization based upon vetted criteria and clear scoring metrics.

8 - Participated in the pilot What Works Cities Program for Stormwater

The Commission provided review and input to the Stormwater Division's pilot involvement in the What Works Cities program, an initiative sponsored by Bloomberg Philanthropies. Stormwater was selected by the City to serve in helping to develop and extend strategic performance management and open data practices into daily operations. Working closely with the City's Budget and Performance Management Office along with Open Raleigh/Information Technology and the What Works Cities Program partners from Johns Hopkins University and Sunlight Foundation, Stormwater now has developed ten program-level Key Performance Indicators and is in the early stages of implementing

an open data program. Through this project, the Stormwater Program has helped to lay the foundation for broad implementation of performance management and open data processes throughout the organization.

Thank you for your continued support of the Commission and the City of Raleigh Stormwater Management Program.

Marc Horstman, Chair
For the Commission



First Row: Kevin Yates, Matthew Starr (*vice-chair*), Marc Horstman (*chair*)
Middle Row: Kenneth Carper, David Webb
Top Row: Vanessa Fleischmann, Francine Durso
Not Pictured: Chris Bostic, Marion Deerhake, Evan Kane

Stormwater Management Advisory Commission Mission Statement

The Stormwater Management Advisory Commission will manage resources sufficiently to protect the public infrastructure, quality of life, environment, and property of the citizens of Raleigh through fair and equitable cost effective means. The SMAC recommendations will seek to improve, enhance, and protect the quality of the Neuse River and its tributaries.